Siliconix incorporated

VN45350 SERIES

N-Channel Enhancement-Mode MOS Transistors

T-27-25

PRODUCT SUMMARY

PART NUMBER	$V_{(BR)DSS}$ (V)	$r_{DS(ON)}$ (Ω)	I_D (A)	PACKAGE
VN45350L	450	350	0.030	TO-92
VN45350T	450	350	0.020	SOT-23

Performance Curves: **VNDO50** (See Section 7)

PRODUCT MARKING	
VN45350T	V04

TO-92 **BOTTOM VIEW**

1 SOURCE
2 GATE
3 DRAIN

SOT-23 **TOP VIEW**

1 DRAIN
2 SOURCE
3 GATE

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	VN45350L	VN45350T	UNITS
Drain-Source Voltage		V_{DS}	450	450	V
Gate-Source Voltage		V_{GS}	±30	±30	
Continuous Drain Current	T_A = 25°C	I_D	0.030	0.020	A
	T_A = 100°C		0.019	0.013	
Pulsed Drain Current[1]		I_{DM}	0.12	0.08	
Power Dissipation	T_A = 25°C	P_D	0.80	0.35	W
	T_A = 100°C		0.32	0.14	
Operating Junction and Storage Temperature		T_j, T_{stg}	−55 to 150		°C
Lead Temperature (1/16" from case for 10 seconds)		T_L	300		

THERMAL RESISTANCE

THERMAL RESISTANCE	SYMBOL	VN45350L	VN45350T	UNITS
Junction-to-Ambient	R_{thJA}	156	350	°C/W

[1]Pulse width limited by maximum junction temperature

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ELECTRICAL CHARACTERISTICS[1]			LIMITS			
				VN45350		
PARAMETER	SYMBOL	TEST CONDITIONS	TYP[2]	MIN	MAX	UNIT
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = 10 µA	490	450		V
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 10 µA	3.5	1.0	4.5	V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±20 V	±1		±100	nA
		T_J = 125°C	±5		±500	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 250 V, V_{GS} = 0 V	0.003		0.050	µA
		T_J = 125°C	2		5	µA
On-State Drain Current[3]	$I_{D(ON)}$	V_{DS} = 15 V, V_{GS} = 10 V	30	15		mA
Drain-Source On-Resistance[3]	$r_{DS(ON)}$	V_{GS} = 10 V, I_D = 10 mA	320		350	Ω
		V_{GS} = 10 V, I_D = 5 mA	300			Ω
		T_J = 125°C	650		820	Ω
Forward Transconductance[3]	g_{FS}	V_{DS} = 15 V, I_D = 10 mA	14	5		mS
Common Source Output Conductance[3]	g_{OS}	V_{DS} = 10 V, I_D = 1 mA	4.5			µS
DYNAMIC						
Input Capacitance	C_{iss}	V_{DS} = 25 V, V_{GS} = 0 V, f = 1 MHz	5		20	pF
Output Capacitance	C_{oss}		1.8		10	pF
Reverse Transfer Capacitance	C_{rss}		0.5		5	pF
SWITCHING						
Turn-On Time	$t_{d(ON)}$	V_{DD} = 25 V, R_L = 2500 Ω, I_D = 10 mA, V_{GEN} = 10 V, R_G = 25 Ω (Switching time is essentially independent of operating temperature)	4.5		10	ns
	t_r		8		15	ns
Turn-Off Time	$t_{d(OFF)}$		15		30	ns
	t_f		60		100	ns

NOTES: 1. T_A = 25°C unless otherwise noted.
2. For design aid only, not subject to production testing.
3. Pulse test: PW = 300 µs, duty cycle ≤ 2%.